

BREEAM AWARDS 2010





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The BREEAM Awards recognise and reward those involved in the design and construction of the highest scoring buildings certified under BREEAM.

A BREEAM Excellent rating is a pre-qualification, so the winners truly represent the top examples of sustainable design. The awards are not subjective as each development has been independently assessed and certified. In order to win an award, each building must have excelled in every environmental category within BREEAM (eg from Energy to Ecology) and therefore winners represent a holistic approach to delivering environmental sustainability.



BREEAM BESPOKE

BLETCHLEY LEISURE CENTRE



About the building

The construction of the new Bletchley Leisure Centre for Milton Keynes Council is central to the Council's strategy for regenerating Central Bletchley, which also includes a multi-storey car park, public realm improvements and road re-alignments.

The facilities in the new leisure centre include a 25 m competition pool, four squash courts, sports hall, health and fitness suite, dance studio, café, indoor bowling facilities and multi-purpose function rooms.

From the outset Milton Keynes Council sought to establish a sustainable approach to the regeneration project and set a target BREEAM rating of Excellent for the leisure facilities.

Key facts

BREEAM rating:	Excellent
Score:	79.60% (Design Stage), 79.64% (PCR)
Size:	The gross floor area is 9572 m ² , the total functional area for the purpose of the BREEAM assessment is 6212 m ²
Stage:	Design and Post-Construction
BREEAM version:	BREEAM Bespoke 2006

Overview of environmental features

- Biomass boiler
- Increased insulation
- Extensive sub-metering
- Consideration of natural ventilation wherever possible
- Responsible sourcing of materials
- A-rated materials wherever possible
- Minimising water consumption
- Consideration of pollution risks in use wherever possible

The BREEAM assessment

The building scored well through:

- Excellent construction management
- Good access to public transport
- Good consideration of health and wellbeing
- Good consideration of energy use and energy management
- Consideration of materials, including responsible sourcing

Building services

The leisure centre's hot water and space heating demand is met by a biomass boiler with back up high efficient, low NOx gas boilers. The building utilises natural ventilation for cooling in the bowls and sports hall areas, using Monodraught units. The atrium is also cooled with natural ventilation. A thermal wheel uses heat from extract air to warm the fresh air intake. There are inverter driven motors on all fans and most pumps, allowing motor speeds to be reduced when demand is reduced and so achieving higher efficiencies.

There is zone control of heating, and the small amount of air conditioning is served from air source condensers fitted with heat recovery units. Variable refrigerant volumes are also used to exchange warmth between warm rooms and cooler rooms. Rain water harvesting is used to supply the majority of the WCs.

Green strategy

The project manager at SDC championed the BREEAM requirements and ensured that credits were achieved wherever possible. For example, the development achieved a score of 36.5 in the Considerate Constructor's Scheme (defined as exemplary level under BREEAM 2008), and achieved 100% in the management section. The project manager ensured that details of the building were published around the site and that the public were kept informed of progress. Whilst not included in BREEAM, the leisure centre is an exemplar for disability access, with consideration made to incorporate special features for good access.

The design team took particular care to minimise the environmental costs in use, for example incorporating a biomass boiler and reducing water consumption wherever possible. Sanitary specification generally went beyond BREEAM requirements, and incorporated push to operate showers to minimise water use and 6/4 litre dual flush WCs to non-ampulant facilities.

Project team details

Client – Milton Keynes Council

Contractor – SDC

Architect – Holder Mathias Architects

Building services – Venables Associates

Structural Engineer – BWB Consulting

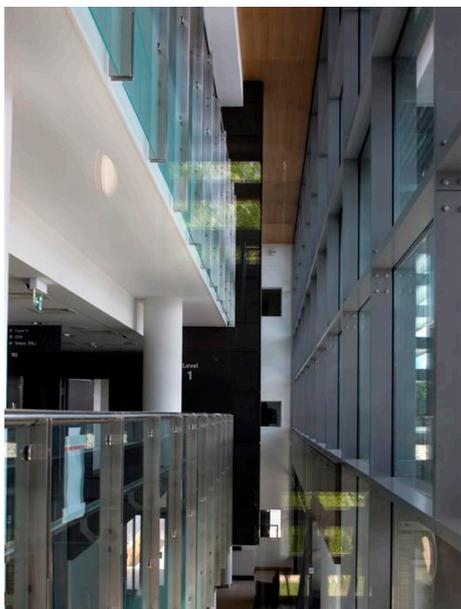
BREEAM Assessor – Rickaby Thompson Associates

"As a leading and expanding 'New City' we see sustainability measures as vital to developing successful communities and facilities. Achieving BREEAM Excellent was absolutely central to our requirements for the new leisure centre. This has provided a significant reduction in running costs and therefore Council subsidy, and is ultimately one of the key measures that has helped the Council to save over £3 Million in revenue funding during a 15 year period. At a time where public sector funds and discretionary services are under significant pressure, the Council is delighted with the result and the state-of-the-art facilities that the community can now enjoy."

Paul Sanders, Milton Keynes Council

BREEAM COURTS

SALISBURY LAW COURT



About the building

Commissioned by Her Majesty's Courts Service (HMCS), Salisbury Law Court is a three storey building containing courtrooms, judges' offices, witness suites, hearing rooms, advocates' suites, jury rooms, conference rooms, judges' library and lounge, office space, public waiting areas and other facilities. The site occupies an urban area of Salisbury, along the A36, Wilton Road. HMCS set a BREEAM target of Excellent for the new court building and the project team worked with the BREEAM Assessor from an early stage to develop a strategy for delivering this.

Key facts

BREEAM rating:	Excellent
Score:	72.59%
Size:	The total functional area for the purposes of the BREEAM assessment is 3,779 m ²
Stage:	Design
BREEAM version:	BREEAM Courts 2006

Overview of environmental features

- Enhanced thermal values and standards of airtightness levels
- Maximised natural daylight through glazed elevations and internal glazed screening
- Highly efficient building services systems
- Innovative concrete frame solution to reduce concrete volume by 2,000 m³
- Reduction of water consumption with low water use appliances
- Inclusion of solar hot water collector
- Landscape designed to mitigate environmental impact and enhance the ecological value
- Environmental good practice incorporated throughout the construction process
- Construction materials and waste segregated and recycled

The BREEAM assessment

The building scored well through:

- Excellent construction practices helped to deliver maximum credits under the Management section
- Provision of cyclist facilities and good access to local public transport maximised credits under the Transport section
- A strategic approach to meeting and exceeding the requirements of Part L of the Building Regulations and a commitment to using renewable energy technology helped deliver significant credits under the Energy section
- Consideration of both Health and Wellbeing issues and the water use helped deliver significant credits under these sections

Building services

Space heating and hot water is provided from a low temperature hot water (LTHW) system supplied by gas-fired boilers. Hot water services incorporate a thermal solar system to preheat the domestic hot water. Heat distribution is via perimeter radiators to office areas, and either fan coil units or a constant volume system to the court rooms. Local heating control is achieved by the building management system (BMS).

Ventilation is provided by a combination of a central mechanical system to the court rooms, and natural ventilation with cooling supplied to court rooms and noise sensitive areas via the central system with air cooled chillers.

The lighting design balances natural light with the use of high efficiency, low brightness luminaires. A flexible lighting control system allows for central or local occupant control.

A BMS monitors and regulates the energy systems.

Green strategy

The Design Manager for Mansell Construction worked closely with the BREEAM Assessor on the strategy for achieving BREEAM Excellent, and formulated a system for allocating and tracking evidence submitted to the assessor. Regular reviews ensured that the assessment stayed on track and was up to date with design and construction.

Mansell Construction adopted best practice standards for monitoring construction phase impacts, and ensured that sub-contractors were equally aware of the impacts of their work through waste and resource use.

The project team worked closely with BSRIA to evaluate design choices against the whole life cost model, and ensured that the detailed evaluations in the model were fed back to the design process. This informed choices of major plant items and should assist in the longer term maintenance and management of the building.

Project team details

Client – Mansell Construction Services
Architects – Stride Treglown/Fielden and Mawson
Services consultant – Foreman Roberts
Main contractor – Mansell Construction Ltd
BREEAM Assessor – Rickaby Thompson Associates Ltd
Other consultants – Peter Brett Assoc (Structural Engineers), Alan Saunders Assoc (Acousticians), Card Geotechnics (Geotechnical Consultants), BSRIA (Whole Life Costing), Middlemarch (Ecologists), Pinnacle (Transport Consultants).

“The BREEAM process ensures that sustainability is integrated fully into design, procurement and construction, demonstrating a high level of corporate responsibility whilst reducing environmental impact. The structured approach and continuous design reviews also help to ensure that the facility not only performs environmentally in conservation areas, but also that use and maintenance requirements are taken into consideration – whilst understanding whole life costs to ensure best value.” Ian Orme, Rickaby Thompson Associates Ltd

BREEAM ECOHOMES

SANDERSTEAD ROAD, CROYDON



About the buildings

This new housing development is set on a derelict brownfield site, a little under half a hectare in size, on Sanderstead Road in the London Borough of Croydon.

It comprises a three-storey block of 38 one and two bedroom flats, partly constructed over three new ground floor commercial units, with two blocks of three-storey semi-detached, four bedroom houses in the courtyard area to the rear.

Croydon is an environmentally proactive borough council, and sets standards that exceed government targets. In line with this, a condition of the granted planning consent was for the development to achieve an Ecohomes rating of Excellent.

Key facts

BREEAM rating:	Excellent
Score:	75.41%
Size:	42 units
Stage:	Design
BREEAM version:	Ecohomes 2006

Overview of environmental features

- A well located development site with good access to local amenities and public transport
- Surface water run-off fully attenuated through the use of sustainable drainage technology and on-site percolation
- Timber frame construction with significant insulation achieving good thermal performance
- All energy efficient internal and external lighting
- Photovoltaic solar panels
- Environmentally sound materials specification
- Ecological enhancements in accordance with the recommendations of an accredited ecologist
- Careful design consideration given to the provision of daylight
- A commitment to improved sound insulation at the properties in order to exceed the requirements of building regulations by three decibels

The BREEAM assessment

The development performed well across most categories, but particularly in relation to Materials and Management.

The Design & Build contractor fully embraced its responsibilities, operating excellent procurement and site management procedures whilst adopting environmentally aware design development.

Building services

Heating and hot water services are provided by highly efficient SEDBUK Band A natural gas condensing boilers, with photovoltaic panels serving the communal lighting and electrical services.

All internal, external and communal space lighting is energy efficient.

Green strategy

The development used a highly insulated and responsibly procured timber frame, resulting in good thermal performance and environmentally sound construction.

Surface water run-off was managed on site using sustainable drainage techniques, however the water collected for irrigation was excluded from the design calculations and consequently the overall site storage exceeds the 100% attenuation requirement.

The thermally efficient, highly insulated timber frame construction, in conjunction with 100% energy efficient lighting and natural gas condensing boilers, will ensure reduced heating and running costs for the social housing tenants. The use of photovoltaic panels to serve the communal spaces, whilst meeting the renewable energy targets for the development, will also offer reduced running costs for the landlord.



Project team details

Client and Developer – Metropolitan Housing Trust
Contractor – Mansell Construction Services
Architect – AHP Architects & Surveyors Limited
BREEAM Assessor – AHP Architects & Surveyors Limited.

“BREEAM certification was a requirement of the environmentally proactive borough council, which also ensured that Housing Corporation funding was available for the development. Appointing an architect with ‘in house’ accredited BREEAM Assessors, ensured that the design development maintained a focus on the target environmental rating.” Mark Lydall, AHP Architects & Surveyors

BREEAM FURTHER EDUCATION

LORETO SIXTH FORM COLLEGE



About the building

The Ellis and Kennedy building is the final phase of current development at Loreto Sixth Form College in Manchester. It provides accommodation for traditional and specialist curriculum subjects, a learning resource centre, ICT facilities and a library. The building is on a brownfield site to the south of the College estate. It is in the curtilage of a Grade II listed chapel and is bordered by a busy city arterial route.

The project is majority funded by the Learning Skills Council (LSC). A condition of the funding was to achieve a minimum BREEAM Very Good. This development has gone beyond that to achieve BREEAM Excellent.

Key facts

BREEAM rating:	Excellent
Score:	74.01%
Size:	6583 m ²
Stage:	Post-Construction
BREEAM version:	BREEAM Schools 2006

Overview of environmental features

The Ellis and Kennedy building benefits from:

- Good use of renewable and low carbon technologies such as ground source heat pumps and photovoltaic cells
- Reduced energy use for the building achieved through improved U-values and permeability rates, and high efficiency plant such as chillers with waste heat reclaim and evacuated solar tubes feeding into the heating system
- Provision of a comfortable working environment with predominantly naturally ventilated spaces, good local controls for heating and lighting, solar control glass and high acoustic targets
- Extensive green roof with native species oasis to reduce the ecological impact of the development
- Rain water harvesting and low water use
- Use of materials with low environmental impacts

The BREEAM assessment

The design achieved a high percentage in all of the areas of the BREEAM assessment, scoring particularly well in the Management, Health and Wellbeing, Water and Land Use and Ecology sections.

There was also a high commitment in the Energy section, achieving a 22% reduction in CO₂ emissions against Building Regulations L2A 2006, with 28.6% of total energy use derived from sustainable technologies.

Building services

Heating is provided by a mixture of ground source heat pumps, evacuated tube solar collectors and high efficiency condensing boilers. Cooling demands are provided by the ground source heat pumps and a high efficiency flood plate evaporator chiller, from which waste heat is reclaimed to service the hot water demands. A proportion of electrical demands are met by a 270m² vertical photovoltaic cell array providing an estimated 24,300kWh/yr of electrical power to the building.

All of the sustainable design elements combined will deliver a reduction of 8.94 kg/CO₂/m²/yr, an on-site renewable energy contribution of 173,677 kWh/yr, an electricity saving of 18.94 kWh/m²/yr and gas savings of 92.93 kWh/m²/yr.

The rainwater harvesting system will save an estimated 900m³ of water a year.

Green strategy

The brief was to deliver a state of the art teaching facility that promotes sustainable design to the college and its wider community. The design team and client took ownership of the need to protect the environment and provide a sustainable building at an early stage:

- Targets for reducing CO₂ in the building and use of renewable and low carbon technologies were set and exceeded

- Specialist ecological support was provided to reduce the ecological impact of the development leading to the introduction of a green roof
- Materials were assessed and compared to ensure the lowest possible environmental impacts
- Involving the contractor in reducing site impacts was considered particularly important on this site, because of the tight working space available and the potential effects on the existing college. This was achieved by adopting good work practices, reading and monitoring water and energy consumption, managing waste and ensuring sustainable materials were used for all temporary works

Project team details

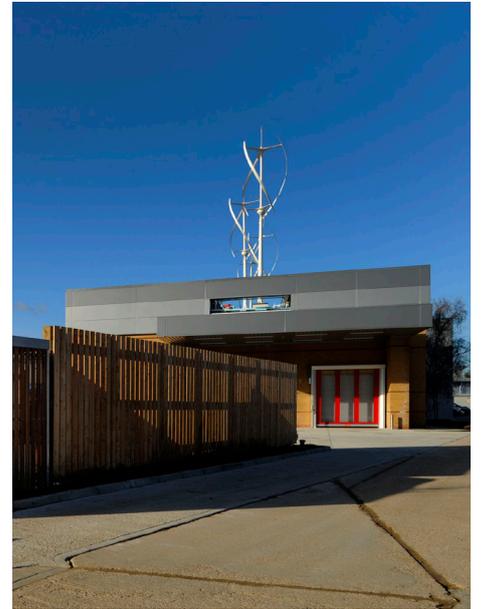
Client – Loreto College
Architect – Taylor Young Ltd
Building services – Waterman Group
Structural engineer – Wright Mottershaw Lydon
BREEAM Assessor – WYG Engineering
Strategic managers – AA Projects Ltd
Project managers – AA Projects Ltd
Employers agent – AA Projects Ltd
Quantity surveyors – AA Projects Ltd
CDM co-ordinator – AA Projects Ltd
Contractor – Bardsley Construction Ltd

“The key to achieving the BREEAM Excellent on this project was the commitment to sustainability by the Design Team at an early stage and throughout the design process. The fact that they were open to new ideas made this an interesting and successful project to work on.”

Sheila Mackenzie, Principal BREEAM Consultant at WYG Engineering

BREEAM INDUSTRIAL

VLA STORES, SURREY



About the building

A new two-storey Stores Building is replacing existing accommodation on the Veterinary Laboratories Agency (VLA) campus near Weybridge. It has primary storage and goods-in and -out areas located on the ground floor, for reasons of structural loading and accessibility, with the lighter loads of the box stores, office, lockers and rest room on the first floor.

The building has been designed for compact and economical space use and circulation flow in a minimum rectangular envelope. This achieves both a reduced volume of heated space in the building (and so of energy demand) and a reduced external surface area from which heat energy can be lost.

The Stores Building was commissioned by the Department of environment, food and rural affairs (Defra), as part of a wider redevelopment of the campus. The project was BREEAM assessed in accordance with Defra's policy of achieving the highest environmental targets for developments on its estate.

Key facts

BREEAM rating:	Excellent
Score:	83.76%
Size:	1500 m ²
Stage:	Design
BREEAM version:	Industrial 2006

Overview of environmental features

- Vertical axis wind turbines mounted on the roof
- Bio fuel boiler
- Compact building envelope with good thermal insulation
- Solar shading
- Surface water run off from roof via 'weir' cascade (instead of traditional downpipes) into underground storage and attenuation tank (due to local high water table)
- Rainwater harvested and used for toilet flushing
- Good thermal insulation and airtightness. The site's

relatively exposed and noisy location next to the M25 allowed for noise reduction through the building fabric to be combined with highly insulated external walls and roof. The nature of the building requires a largely windowless external envelope, which also gave opportunities for achieving a good thermal and air tight envelope.

The BREEAM assessment

The project performed very well across all categories with the top scoring categories being:

- Water and Management, which both achieved 100% of available credits
- Pollution: 92.31%
- Health & Wellbeing: 85.71%
- Energy: 83.33%

Building services

- Bio fuel boiler – running on pure rapeseed oil which has a low CO₂ emission factor
- 4 x 6kW vertical axis wind turbine units – feeding back into the site electricity network when the building's use is less than the electricity generated
- Sun pipes – supplementing passive infrared (PIR) controlled lighting to internal areas
- Solar thermal heating to supplement the low-temperature hot water (LTHW) system

Green strategy

The client set out the objectives for this project from the very first briefing meetings and was emphatic in aiming for the highest achievable green strategy.

As part of earlier initiatives for Defra, the design team had reviewed more than 30 possible options for environmentally sustainable improvements that could be used on the VLA campus redevelopment. This allowed them to quickly assess and incorporate the most appropriate elements into the new Stores Building during the briefing and design stages, so these were fully integrated into the design and not considered as later 'add-ons'.

This approach also enabled the maximum synergy between mutually contributing elements – e.g. water storage/ storm water attenuation/reduction of above and below ground drainage/optimisation of site area – giving added value to the BREEAM elements.

Project team details

Client – Defra, VLA
Project Manager – Cyril Sweett
Architect – Wilson Mason & Partners
Building Services Engineer – Zisman Bowyer & Partners
Structural Engineer – Gifford & Partners
Cost Consultant – Nisbet
CDM Coordinator – Cyril Sweett
BREEAM Assessor – Cyril Sweett
Main contractor – Walter Lilly

"BREEAM certification is a recognised measure of success for all Defra projects where the quality and sustainability of the environment is a stated objective. Also, the knowledge that the environmental targets have been assessed and met, whilst providing a building that can function efficiently with cost effective systems, stimulates a feeling of wellbeing and satisfaction with their workplace for both the building's owner and occupants."
Defra Project Sponsor

BREEAM INTERNATIONAL

CENTRUM GALERIE, DRESDEN



About the building

Centrum Galerie is the biggest shopping mall in Dresden. Its development completed the regeneration of the Altstadt area in Dresden city centre. In addition to being a highly sustainable building, it combines international retail stores and gastronomic concepts with a day-care centre, multi-storey parking for 1000 vehicles and highly attractive architecture.

Centrum Galerie is the first building in Germany, and the first shopping mall in continental Europe, to receive BREEAM Excellent.

Key facts

BREEAM rating:	Excellent
Score:	76.46%
Size:	52,000 m ²
Stage:	Design
BREEAM version:	International Bespoke 2006

Overview of environmental features

To help optimise energy and other resource use:

- The building is designed on three levels for optimum land use
- High quality materials and meticulous building design reduce heat transfer loss by 40% compared to EnEV 2004 requirements (German Energy Saving Regulation)
- The development has a comprehensive lighting management system
- Maximum use is made of natural lighting
- Photovoltaic panels have been installed to provide part of the energy needs of the centre
- There is separate sub-metering of energy consumption by tenancy areas
- All escalators and travelling walkways in the public areas of the mall have energy saving controls, avoiding unnecessary operation when there are no passengers
- Substantial roof greening reduces the effluent coefficient of rainwater and provides a rooftop park for the day-care centre
- A traffic reducing travel plan has been developed

The BREEAM assessment

The Centrum Galerie development scored extremely well under the Management and Transport sections of BREEAM, with a 100% score in each. It also scored well under Health and Wellbeing and Energy.

Green strategy

Careful use of resources and optimisation of the energy and space consumption has been a critical issue of the Centrum Galerie project since planning began in 2006.

It is an inner-city regeneration project that makes the best possible use of land and is close to all major public transport facilities.

The design of the building and the use of the most advanced technologies all contribute to protecting resources. For example, the lifts and escalators have an energy saving mode – in fact all lifts are designed with an energy recovery system, with an active return of excess energy to the grid.

The mall is well located with key amenities, such as churches, restaurants, pharmacies and hotels, all within safe walking distance. It is also close to major public transport links and all entrances of Centrum Galerie can be reached directly by bicycle. A travel plan has been developed to include, for example, a restriction on delivery hours and the integration of parking sites into the Dresden car parking network to minimise traffic.

Project team details

Client – Multi Veste Dresden GmbH
Developer – Multi Development Germany GmbH
BREEAM Assessor – Drees and Sommer Advanced Building Technologies GmbH
Architect – Peter Kulka Architektur Dresden GmbH

“We are very proud to receive BREEAM Excellent certification, as sustainability is a key priority in all Multi projects, along with high quality architecture. The award of the certificate highlights our extensive commitment in this sector.”

Jörn Kreuzahler of Multi Development Germany GmbH



BREEAM MULTI-RESIDENTIAL

CARNEGIE VILLAGE, LEEDS METROPOLITAN UNIVERSITY



About the building

Carnegie Village is a student residential development within the existing Headingley Campus of Leeds Metropolitan University, providing 479 study bedrooms in 'cluster flat' and 'townhouse' arrangements. The commitment of Leeds Metropolitan University and the University Partnership Programme to environmental issues required this student accommodation to focus on sustainability and improving environmental performance. BREEAM certification was a requirement of Leeds Metropolitan University.

The new accommodation is seen as part of the student education, and incorporates many of the attributes that support sustainable student living.

Key facts

BREEAM rating:	Excellent
Score:	76.10%
Size:	10,275m ²
Stage:	Design
BREEAM version:	BREEAM Multi-Residential 2006

Overview of environmental features

Key design features include

- High levels of insulation
- High levels of airtightness
- Mechanical heat recovery ventilation systems
- Low Nox, A-rated gas condensing boilers
- Solar water heating
- Building management system
- Low water use aerated taps and showers, dual flush WCs
- SUDS (sustainable drainage system) wastewater attenuation system
- Full, low energy lighting /passive infrared (PIR) to common areas
- High levels of acoustic performance
- Dimensioning to accommodate standard building material sizes
- Simple plan configuration
- Use of A-rated Green Guide products
- FSC-certified timber

- Ecologist's recommendations implemented
- Recycling storage space
- First student residential scheme in the UK to incorporate buildings to Passivhaus standard.

The BREEAM assessment

The development achieved a BREEAM Excellent rating scoring 76.1%. The largest percentage of credits per section were gained in the Management section – over 91% of available credits were achieved. Overall the building performed particularly well in the Water and Land Use & Ecology sections, whilst credits gained in the Energy and Transport sections contributed most to the overall credit score.

Building services

The overriding approach has been to reduce energy loads by passive means. High levels of insulation and excellent air tightness significantly reduce space heating requirements – the largest energy load is providing hot water.

Whole house mechanical heat recovery ventilation units are used to deliver fresh, filtered air to all habitable rooms, with 80% heat recovery efficiency. Solar thermal collectors are used on the cluster flat accommodation to pre-heat water.

Aerated taps and showers deliver controlled amounts of water, and dual flush WCs are used throughout.

Metering of utilities is discrete to each townhouse, enabling each dwelling to review and compare actual use online.

Green strategy

Attention has been given to the construction process and waste generation during construction. The building incorporates significantly higher levels of insulation and airtightness than required by current building regulations.

A variety of measures have been adopted to ensure a healthy internal environment, in particular quality of indoor air, levels of natural light and improved acoustic performance.

Wherever possible natural and benign materials and finishes are used internally, care being taken to avoid materials that omit unwanted VOCs. All paint finishes are based on natural technologies and solvent free. Traditional solvent-based adhesives and sealants are avoided.

The use of controlled ventilation with heat recovery ensures a continuous supply of fresh air to all habitable rooms, and helps maintain optimum humidity levels in the accommodation.

The townhouses are designed so that only the party walls are load bearing with floors spanning between these walls. This allows the internal space to be flexible in respect of layout and may be reconfigured if necessary, so future proofing the accommodation.

Project team details

Client – University Partnership Programme Ltd
Project Sponsor – Leeds Metropolitan University
Architect – GWP Architecture Ltd
Contractor – Shepherd Construction Ltd
M&E Engineers – Imtech G+H Ltd
Timber Frame Engineers – Prestoplan Ltd
Cost Consultant – SDA Consulting Ltd
BREEAM Assessor – GWP Project Services Ltd

"We have found the discipline of undertaking the BREEAM assessment to be helpful to the project delivery team and not difficult to satisfy given the background and approach to the student residential concept, which is based on sustainable principles."
John Wybor, Director, GWP Architecture



BREEAM OFFICES

HORIZON HOUSE, BRISTOL



About the building

Horizon House is the Environment Agency's new corporate office. Developed by Westmark, the office building is part of a larger, mixed-use development in the centre of Bristol, which includes another office building and a residential block.

The high BREEAM target was set by Westmark and was key to securing the Environment Agency's tenancy. This building meets the brief to develop a commercially viable building to the highest environmental standards.

Key facts

BREEAM rating:	Excellent
Score:	85.06%
Size:	6,600 m ²
Stage:	Design and Procurement
BREEAM version:	Offices 2006

Overview of environmental features

- Energy use is minimised through a mixed mode ventilation system
- Effective natural ventilation of the deep plan office is achieved by strategic building design
- The building uses ground source heat pumps, solar water heating and photovoltaic panels as renewable energy sources
- Rainwater is collected from the building's roof and used to flush toilets
- The post tensioned floor slab provides lower environmental impact over the whole life of the building
- The construction materials are from ISO 14001 accredited suppliers
- All timber is from sustainable sources
- A wildflower meadow has been established on the office roof terrace
- A SUDs (sustainable drainage system) strategy reduces flood run off from the site
- A green travel plan has been developed to meet the needs of the building users

The BREEAM assessment

The building performed well across all of the BREEAM categories. Full credits were achieved in the Management, Transport and Water sections, and more than 90% of credits were achieved under Health and Wellbeing.

The real success was that the project wholeheartedly embraced the aims of BREEAM, securing the challenging credits as well as the more straightforward ones.

Arup is now monitoring the construction process, on behalf of the developer and tenant, to ensure that the details of the sustainable design are completed on site. In addition, the environmental impact during construction has been reduced through the recycling of waste materials and careful management of energy and resources on site.

Building services

Ground source heat pumps are the primary source of heating, supplemented by gas boilers. The zoned heating is provided by fan coil units located within the raised floor voids.

Ventilation is provided by a mixed mode system. The mechanical ventilation is used at low temperatures, to enable heat recovery, and high temperatures, when cooling is provided. During mid-season conditions, the building is naturally ventilated via high level windows in the façade, and atrium roof openings.

The primary source of cooling is the ground source heat pumps.

Hot water is provided by solar panels and is supplemented by the ground source heat pumps and gas boilers.

Photovoltaic panels supplement the mains electricity supply.

Green strategy

The high environmental aspirations for the project were embedded in the design from the outset, leading to particularly high performance in the following areas:

- 26.32% reduction of CO₂ over building regulations
- 19.5% of the energy demand provided by renewable technologies
- Predicted transport CO₂ emissions from transport of 254.8 kg/person/year
- High provision of cycling facilities
- Over 80% of major building elements A rated and responsibly sourced
- Water consumption of 1.27 m³/person/year
- Enhancing and maintaining site ecology on a city centre site

Project team details

Developer – Westmark

Tenant – Environment Agency

Main contractor – Sir Robert McAlpine

Architect - Alec French Architects

Building services engineers – Arup (up to stage C) and Hoare Lea (from stage D)

Civil and structural engineers – Arup

Ecological consultant – Clarke Webb Ecology Limited

Landscape architect – Cooper Partnership

BREEAM Assessor – Rowena Jolly, Arup

"The high BREEAM target score set by Westmark was pivotal in securing the Environment Agency as a prestigious and long term tenant. It also gives the tenant the opportunity to reduce running costs, the extent of this being determined by how they choose to use the building services incorporated into the design." Adrian Slade, Westmark

BREEAM PRISONS

LITTLEHEY II YOUNG OFFENDERS INSTITUTE



About the buildings

The buildings comprise two of four, 120-cell accommodation blocks at HMP Littlehey II, a young offenders institute. A total of twelve buildings across the site achieved a BREEAM Excellent rating, including all of the house blocks, a sports hall, kitchen, administration building, education and multi-faith facilities, segregation unit, visitors' centre, reception and healthcare facilities, and workshops.

All Ministry of Justice (MoJ) developments are required to meet BREEAM Excellent with a view to reducing the carbon impacts of the UK estate.

Key facts

BREEAM rating:	Excellent
Score:	76.23%
Size:	1741.05 m ² x 2
Stage:	Design
BREEAM version:	Prisons 2006

Overview of environmental features

- Site wide biomass heating strategy
- Naturally ventilated
- Responsibly sourced materials
- Rainwater recycling
- SUDs (sustainable drainage system) strategy
- Site wide modifications rectified foul water drainage problems (the proposed sewage treatment option was omitted because the local treatment works then had sufficient capacity)
- Modifications to an existing balancing pond gave it sufficient capacity to avoid excessive costly rainwater storage underground
- The modular construction strategy significantly reduced waste onsite (this is not recognised in BREEAM Prisons 2006)
- Overall the buildings achieved more than 80% in the BREEAM categories of management, energy, water and land use and ecology

The BREEAM assessment

Management

Full credits achieved, including contractor related practices (a Considerate Constructor Scheme was in place and scoring very highly during audit, with 37 and 37.5 out of maximum scores of 40) and consideration of management during building operation.

Energy

The biomass heating system provides on average over 30% of annual heat usage. The modular construction has outstanding thermal performance and integrated high performance M&E design.

The energy and management strategies allowed for helpful monitoring and comparisons of the buildings across the site.

Materials

Premier Interlink's ISO 14001 demonstrates commitment and respect for the environment.

Waste

70% of all waste at the Premier Interlink factory is recycled or composted, and site figures of 80% and above were achieved on monthly audits.

Water

The low potable water use strategy includes rainwater recycling and electronically controlled sanitary fittings.

Ecology

The site wide landscaping design achieved full credits for enhancing site ecology. Ecological features were identified and protected during construction activity.

Pollution

Credits were awarded for the SUDs strategy, flood risk assessment, renewable energy use and designing out the use of refrigerants.

Transport

Due to the location of the site there was limited public transport access, but all other issues in this category were achieved. During construction the site ran its own park and ride scheme, using an Anglian Water car park as a collection and drop off point, to reduce traffic local to the site and the existing fully functioning prison.

A non-compulsory post-construction performance review will be undertaken imminently.

Building services

- Site wide biomass heating system
- Underfloor heating
- Substantial energy uses sub-metered
- The natural ventilation strategy omits the need for comfort cooling
- Predicted improvement over Part L of 28.14%
- Whole life performance analysis carried on building services

Project team details

Client – Ministry of Justice

Contractor – Wates Construction Ltd

Sub-contractor – Premier Interlink Waco UK Ltd

Architect – Capita Symonds/
Premier Interlink Waco UK Ltd

M&E – Capita Pearce Buckle/
Premier Interlink Waco UK Ltd

BREEAM Assessor – Inbuilt Ltd

BREEAM RETAIL

WHITE RIVER PLACE, ST. AUSTELL



About the buildings

This £75 million scheme, which involves the renovation of a brownfield site into a stimulating town centre for St Austell, features a mix of uses over seven floors including retail, catering, offices, cinema and a 550 space car park.

The White River Place development was part funded by the South West Regional Development Agency (SWRDA) and the contractual requirement was to achieve BREEAM Very Good. But SWRDA and the joint venture client White River Developments had aspirations to achieve BREEAM Excellent, which were shared by the contractor Sir Robert McAlpine.

Key facts

BREEAM rating:	Excellent
Score:	74.16%
Size:	14,415m ²
Stage:	Design
BREEAM version:	Retail 2006

Overview of environmental features

Rather than implementing costly elements that pulled the score up, the team and client applied themselves to attaining all available credits by:

- Maximising the materials credits with effective procurement and awareness of issues
- Use of local labour and materials
- Highly efficient use of water and rainwater harvesting
- Implementing effective ecological input on a brownfield site
- Parkmark compliance for the car parking
- Implementing environmental policies and management

The BREEAM assessment

From the outset the BREEAM Assessors coordinated the information required and assisted the team in providing it. By taking this route the project scored very highly in Land Use and Ecology, Materials and Waste, Transport and Water. Full marks were gained in the Management section by using exemplar construction processes, commissioning and environmental procedures.

The BREEAM Assessment was an integral part of project meetings and continued through the project, allowing the principles of the guidance to be reviewed and implemented at very early stages so as not to impact on the cost or programme.

Building services

The mechanical and electrical strategy was designed from the outset with economy and sustainability in mind, but not at the expense of functionality or comfort.

Using passive technologies in a busy town centre was always going to be a challenge. They were employed where possible, but supplemented by low carbon products with high efficiencies, such as heat pumps.

The large expanse of roofing meant that rainwater needed to be attenuated to control flow into the drains, but was an opportunity to provide a large rainwater harvesting system, giving 'free' water for use, not only in landlord areas, but also for irrigation, wash down and to individual tenant premises.

Carbon monoxide sensors are linked to pulse fans in the car park which run at low speed when required to provide fresh air. These fans are also linked to the smoke control system and when the fire alarms are activated can be used to create safe fire brigade access.

Green strategy

The main contractor has ISO 14001 EMS systems and set very high standards for environmental management on site, with a dedicated environmental manager on site throughout the contract.

As major town centre site, liaison and community interaction and involvement were important and Considerate Contractors scores were very high.

Responsible sourcing was also important – sub-contractors and suppliers were questioned about the environmental credentials of materials used. During the construction, sustainably sourced materials (including a high content of

recycled material) will be used wherever possible and all major building elements have a Green Guide 'A' rating.

Concrete was supplemented with ground granulated blast-furnace slag (GGBS) where slabs were not required to be major load bearing, so reducing the CO₂ emissions associated with concrete. Local stone was used, bricks came from neighbouring Devon and concrete blocks were sourced from St Austell. Slightly damaged blocks were used for areas of the building where finishes allowed, saving some 60 skips worth of construction waste. The plans specified Western Red Cedar timber from South West England, rather than Canada.

A green transport plan has been created and a strong pedestrian link is incorporated in the design to encourage movement throughout the town centre.

All jobs associated with the project have been advertised locally, and a local training and education programme has been operated, with weekly visits for GCSE, ONC and HNC construction students. Apprentices have also been employed across the site.

Project team details

Client – White River Developments Ltd
Architect – Chetwoods Architects
Developer – Sir Robert McAlpine Ltd
Building Services – Hulley & Kirkwood
PM/QS – HCD Management
BREEAM Assessors – GBSPM Ltd/TPS Consult

"From the very start the whole team made a conscious choice to ensure sustainability was a key consideration. By sourcing materials locally and incorporating modern technology, including rainwater harvesting systems, we have made sure that White River Place is a beacon for sustainable development in the region and across the industry." Sean Finlay, Director of White River Developments

BREEAM SCHOOLS

ROGIET PRIMARY SCHOOL, MONMOUTHSHIRE



About the building

Rogiet Primary School is a new-build project to replace an existing school on adjacent land in the village of Rogiet, Monmouthshire. The single-storey, timber-frame building accommodates 260 pupils and staff, and has landscaped grounds and external play and sports areas. Monmouthshire County Council set the BREEAM 'Excellent' objective in line with its targets and Welsh Assembly Government guidance on the sustainable development of public buildings.

Key facts

BREEAM rating:	Excellent
Score:	78.18%
Size:	1447 m ² gross floor area
Stage:	Design
BREEAM version:	Schools 2006

Overview of environmental features

Sustainable design principles were followed from the outset, with the client, design team, contractor, and BREEAM Assessor working as a close team in a 'partnering' approach. Key aspects included:

- Single storey plan with high levels of natural daylight in all areas
- Timber-frame construction with glulam and exposed timber elements, with responsibly sourced timber and local supply chain contractors used throughout
- Natural ventilation using both manually and automatically actuated windows, rooflights and vents to ensure good ventilation rates and thermal comfort
- Efficient thermal and building services using high levels of insulation and passive measures to minimise energy consumption.
- Landscape design and planting that maximised both educational benefits for the school and biodiversity enhancement of the site
- Drainage design providing rainwater attenuation to meet local drainage discharge requirements
- Best practice approach to site environmental management and procurement on the part of the contractor

The BREEAM Assessment

The project scored well in all BREEAM categories with 6 of these exceeding a score of 70%:

- Management (80%) – due to a focused approach from both the client and contractor
- Health & Wellbeing (83%) – architectural and building services approach designed to meet or exceed requirements
- Energy (74%) – very good Part L performance and minimal use of mechanical cooling
- Water (86%) – use of both low-use fittings and rainwater capture and reuse
- Materials (76%) – Green Guide A/A+ rated construction and responsibly sourced timber and non-timber materials used throughout
- Pollution (100%) – meeting all achievable BREEAM requirements on refrigerant use, insulation, services specification, renewable energy and flood risk/drainage.

Building services

- Space heating is provided by an ultra-low NOx gas boiler feeding zoned underfloor heating controlled by the BMS
- Hot water is provided by the gas boiler supplemented by a roof mounted solar thermal hot water system
- Lighting is designed to meet all BREEAM requirements and additionally to minimise energy use through PIR and daylight modulation.
- Ventilation is provided in all occupied areas via both manually and automatically actuated windows and rooflights, with a 'Passivent' stack and louvre system to the main hall.
- Renewable/low carbon energy is generated on site via the solar thermal hot water system and a vertical axis wind turbine providing 17% of the building's total energy requirements
- Mechanical cooling is avoided, except in the server room, but the thermal comfort standards of BB87/101 are exceeded with optimally designed natural ventilation
- Rainwater harvesting and storage with reuse for WC flushing

Green strategy

The project team and BREEAM Assessor worked together from the earliest stages of the project, to ensure that the design and project processes were in place to gain the most sustainable outcomes.

Sustainable principles were integrated with the children's education in ways that included:

- Landscape design delivering a nature garden area and a pond for wildlife study
- An eco wall in the library presenting information on the sustainability aspects of the project, and displays of energy use and rainwater capture
- Production of a DVD video of the project including the life-cycle of the recycled cellulose insulation used in the timber frame construction

Project team details

Client – Monmouthshire County Council
Contractor – Willmott Dixon Construction Ltd
Architects & Landscape Design – White Design
Mechanical & Electrical Engineers – McCann & Partners
Structural/Civil Engineers – Jubbs Consulting Engineers
Ecologist – RPS
BREEAM Assessor – WD Re-Thinking Ltd

"BREEAM has set the standards to aim for and has encouraged the site team to interact with the school in developing sustainability as an embedded culture, thus encouraging future generations to live sustainably." Derek Downer, Head of Property Services, Monmouthshire County Council

BREEAM SPECIAL AWARDS

This year, BREEAM is also giving a number of special awards to buildings that deserve particular mention as the first projects certified under new schemes.



FIRST BREEAM INDUSTRIAL 2008 (INTERIM) OUTSTANDING RATING G PARK BLUE PLANET

This 35,500m² building was the first development to achieve an interim Outstanding rating under the new BREEAM 2008. Highlights of G.Park Blue Planet's sustainability include a plan to power the whole development through a biomass plant located on one edge of the site to provide heating and electricity, highly water efficient fittings, a rainwater harvesting system and significant ecological enhancement of the site. Developers Gazeley estimate that the environmental features in the building will save up to £300,000 a year in running costs.



FIRST BREEAM OFFICES 2008 (INTERIM) OUTSTANDING RATING TREGLOWN COURT

Stride Treglown's new office in Cardiff is due for completion in 2010. It is designed to accommodate over 50 staff on two floors in an open studio arrangement. It adopts a paper insulated Structurally Insulated Panel System (SIPs) for supporting walls, roof and floors. The building is located on a former industrial service yard and provides facilities for cycle storage, showers and drying facilities, whilst car share parking spaces are given priority. Green Guide A or A+ rated materials are used throughout.



FIRST BREEAM EUROPE RETAIL DOCKS 76

Unibail-Rodamco's Docks 76 is the new 36,000 m² shopping and leisure centre in Rouen and both the Agrivin and Docks buildings, which are part of Docks 76, achieved the first certification under the new BREEAM Europe Retail scheme for shell and core at the design stage. Particular features of the design which helped achieve this rating including the re-use of an existing building on-site, thereby avoiding the environmental impact of demolition and reconstruction, and a 20% reduction of electricity consumption through the use of natural ventilation. The development also incorporates leak detection systems and water-saving features and the use of water by visitors is expected to be reduced by 30%.



FIRST BREEAM IN-USE INTERNATIONAL BRITISH EMBASSY, BERLIN

The building was originally opened by HM The Queen in July 2000 and is managed by Johnson Controls GWS on behalf of the Foreign & Commonwealth Office. It achieved a 'Very Good' rating for Part 1: Asset Performance and Part 2: Building Management Performance under the new scheme. BREEAM In-Use was launched in March 2009 to help building managers reduce the running costs and improve the environmental performance of existing buildings. BREEAM assessors TPS Consult played a key role in the development of this new scheme specifically for the Foreign & Commonwealth Office.



OGC SPECIAL AWARD FOR GOVERNMENT SECTOR ACHIEVEMENT LION HOUSE



One particular facet of BREEAM's growth is the adoption of BREEAM standards by the Government and wider public estate. The OGC Special Award for Government Sector Achievement recognises achievement in using BREEAM for the Government sector to go beyond the OGC's mandated targets (which are a BREEAM rating of Excellent for new build and a rating of Very Good for major refurbishments). DEFRA's Lion House was originally assessed and certified under BREEAM 2006 but has now been reassessed under BREEAM 2008 and is the first building in the world under BREEAM Offices 2008 to receive its final Outstanding rating.



Level
1



About BRE Global

BRE Global Limited (incorporating LPCB & BREEAM) is an independent third party approvals body offering certification of fire, security and sustainability products and services to an international market. BRE Global's product testing and approvals are carried out by internationally recognised experts in our renowned testing laboratories. BRE Global Limited is custodian of a number of world leading brands including:

- LPCB for the approval of fire and security products and services, listed in the Red Books.
- BREEAM the leading environmental assessment method for buildings, sets the standard for best practice in sustainable design and has become the de-facto measure of a building's environmental performance.

BRE Global's mission is to 'Protect People, Property and the Planet' and is a trading subsidiary of the BRE Trust, the registered research and education charity which owns the BRE Group.

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